## SUPPLEMENT.

# je Mining Iournal,

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

(o. 1413.—Vol. XXXII.)

LONDON, SATURDAY, SEPTEMBER 20, 1862.

[ WITH JOURNAL] STAMPED. ... SIXPENCE. UNSTAMPED. FIVEPENCE.

SOUTH WALES INSTITUTE OF ENGINEERS.

fifth annual general meeting of the members of this valuable scien-sistion was held in the Theatre of the Royal Institution, Swansea, 12 and 13. The President for the current year, Mr. William of Ebbw Vale, Aberdare, took the chair on the 12th inst. soon , of Ebbw Vale, Aberdare, took the chair on the 12th inst. soon of clock, but the business of the first day was of a purely formal in. The ballot papers having been opened and examined, the foliationen were declared duly-elected members of the society—Mr. T. Williams, essee, laving been proposed by Mr. Lionel Brough, Government Inspector of see fire West of England, and seconded by Mr. Thomas Evans, Government of Coal Mines for South Wales; Mr. Robert Eaton, of Swanses, having been by Mr. England, and seconded by Mr. T. H. Hosgood, Mr. W. S. Dorman, of hirting been proposed by Mr. Edward Williams, and seconded by Mr. E. Brignoscope of Mr. Williams. Ash, Aberdare, having been proposed by Mr. E. Brignoscoped by Mr. E. Williams: Mr. J. Brown, of Mountain Ash, New Salams of Mount

in George Brown, of Mountain Ash, Aberdare, having been proposed by Mr. E. williams: Mr. J. Brown, of Mountain Ash, was also at a graduate of the society. This was the whole of the public business transfer six day.

In 13.—The President (Mr. W. Adams) took the chair this day at dock, there being a large attendance of members present, amongst we noticed—Mr. Lionel Brough, of Clifton, the Government Ingelow of the Countain of th THE SELECTION AND TREATMENT OF COAL.

prevalue attracted some attention, we append a few of its chief features:—

If THE SELECTION AND TREATMENT OF COAL.

If we wintroductory observations, Mr. Cox proceeds—Although the site of the same coal field, the interest of the same coal field, as from the different he different seams in the same coal field, as from the same seam in different localities of the same coal field, as from the same seam in different localities of the same coal field, as from the same seam in different localities of the same coal field, as from the same seam in different localities of the different seams in the same seam in different localities of the different seams in the same seam in different localities of the different coals as the results of practical experience—results which had often to contend income of the seam of the sea

does take pince experience convinces us that it does so more extensively when the temperature is at the highest, or, in other words, that the formation of sulpho-cyanogen is tort. The experience, therefore, of the gas acquireer has put is in possioned to the that that the coking of some coals part of their nitrogen forms cyanogen; that this cyanogen under with sulphur, and is evolved with it; that the creation and evolution of this compound is greatest the higher the temperature at which we work—in other words, that certain coals contain in themselves the germs of a power of rendering innoxious under our countril.

Other interestion with the compound its greatest the higher the temperature at which we work—in other words, that certain coals contain in themselves the germs of a power of rendering innoxious under our countril.

"Three-quarter" coal was reported by the inconsumers to whom it was sent as possessed of extraordinary purity, as softening hard iron, and almost converting white iron into grey, and nothing short of a total freedom from sulphur was, therefore, attributed to it. When burnt, however, in the locomotive the report of the drivers led at first to a very different condition. They stated it to be full of sulphur, and that (to hea their own far as regarded the copious evolution of offensive valpour, was found to be correct, it was more than probable that the trials would have been immediately discontinued, had not the favourable character received with this coal come from a source which placed it above suspicion; they were, therefore, proceeded with and watched with more than ordinary care and curiosity. The result was that the action of sulphur conditions of the sulphur conditions of the sulphur conditions of the sulphur conditions of the compound of an above whiteness, and (which was more conclustve) no trace of copper could be found in the ashes from the smoke-box. It thus became evident that the rough estate of the sulphur conditions and the sulphur conditions of the sulphur conditions of the

from Mr. Cox when he said that cyanogen was "produced"—he believed it already existed in the coal.

A long desultory conversation then ensued between Mr. Child, Mr. Parry, and Mr. Cox. Mr. Child (as a chemist) combating the assertion made by Mr. Cox in his paper, that cyanogen was formed by the combination of nitrogen and carbon. He also said that sulphur, being a neutral body, could not be neutralised as stated by Mr. Cox.

Mr. MENELAUS said the question was one of great importance, but it was better that the discussion should drop, for the members generally could not understand what was meant, and he was quite sure the reporters could not take down what was said. (Laughter.) If Mr. Child could be prevailed upon to give his views in a sbort paper, to be read at the next meeting, Mr. Cox would then have the opportunity of replying, and thus this important question be kept open. The subject was of the very greatest importance to the iron trade of the district, and great good would, doubless, resuit by its being again brought under consideration.

Mr. Child Daid he should have no objection to write a short paper explanatory of his views, to be submitted to the next meeting of the Institute. (Hear.)

The President moved that the thanks of the Institute be given to Mr. Cox, for his very valuable paper. There was one thing in its favour—viz., that it had provoked another paper, and perhaps, a third, from Mr. Parry. South Wales being a great iron-making district, the subject was one of the greatest importance to the makers, and hence it should be well and attentively discussed, for that was the only way to get at true and correct conclusions. The better the coal used in the blast-furnace, the better would be the quality of the iron. Some of the red-ash coal of the district was found to have an injurious effect in the make of iron.

PUDDLED STEEL.

The Secretary next read the paper written by Mr. Parry, "On Puddled Steel." The writer said that it was pretty well known that one essential difference between steel and cast-iron is that the latter contains about three Steel." The writer said that it was pretty well known that one essential difference between steel and cast-iron is that the latter contains about three times the amount of carbon required to constitute the former, hence it would appear that to form steel would only necessitate the expulsion of two-thirds of the carbon, and the production of steel would follow, as a matter of course. Practice, however, had proved that such was not the case, as cast-iron as ordinarily made contains other inpurities than excess of carbon. In the satempt to form steel by removing the carbon, by blowing air into the fluid metal, both earbon and silicon are expelled; not so, however, with suphur and phesphorus, two of the most permictors elements contained in cast-fron. They remain behind in the steel, and exert, more or less, a deteriorating influence in proportion to the arbon by the pudding process in this country, not only is the carbon reduced to the desired extent, but the silicon, sulphur, and phosphorus has off into the cluder, the re-working of which in the blast smelting-farmaces produces that kind of bad iron known as "cluder iron." The wast amount of "minities found in the cinder shows the powerful action of the pudding operation as a refining agent, and elatmed special attention to its effect in producing steel, the purity of which is of such amount of minities of the pudding-furnaces have be en proposed. That of Riep has some objections, inasmuch as the mechanical mixture of pig-iron and wrought-iron, rather than true homogeneous steel. Spencer's adaptation of two fire places to the furnace, whereby an exiding and reducing temperature ould be produced alternately, is not necessary, the true theory of padding effected by the oxygen of the cluder, and not by the slightly oxidising atmosphere of the furnace. The oxidinary pudding furnace is found to answer the purpose well, and no variation need se made in the usual mode of manipulation, the result depending entirely upon the temperature at which the operation is carried o

the furnace is high the bolling iron remains in the fluid state for a greater length of time than when low; hence, more carbon is expelled before the iron comes to "nature," or solidifies. It is well known that the melting point of iron veries inversely to the quantity of carbon which it contains—that is, the greater the proportion of carbon the lower the temperature at its point of iron's flower from this that if fluid iron be decarbonised at a lower temperature than in iron-making, solidification takes place at a point when it contains more carbon, and that being sufficient to constitute steel. The manufacture of puddled steel appears to be sufficiently simple, but when hard varieties are required, and a consequent low temperature nocessitated, it is difficult to effect complete welding of the granules which form the ball, more especially when pig-iron containing much silicon is supployed. Perhaps there is no manufacture capable of greater variation in its several parts than that of cast-ateel. In producing the best sized, bar-iron is first made, because during the time taken for the total expulsion of the carbon other in-lurious properties are also got rid of, which are not re-introduced during the side into the necessary amount of carbon to form steel. Steel produced direct from pig-iron by its partial decarburation, as in the Bessemer and other analogous processes, therefore, cannot possess the purity of steel made from bar-iron unless pig-iron could be made equally pure with bar-iron. The fusion of wrought or bar-iron into ateel necessitates the employment of a temperature so excessively high that the operation has only been at present conducted in crucibles of from 40 to 50 lbs. charge. There is good reason, therefore, for stating that there is no difficulty in effecting the fusion and carburating of wroughton, and finding it in any quantities, like pig-iron from large furnaces, thus soffding tengineers the command of a better cast-ateel than can be produced from pig-iron direct.

Mr. MENRLAUS said that

MINING IN THE COUNTY OF LEITRIM.

This paper stated that some beds of coal and ironstone had been discovered in various parts of Iroland, and if Irish capitalists had possessed only a moderate amount of enterprise they would long ago have turned it into account. It was generally asserted that the coal beds of Iroland were very shallow, but the writer doabted whether any reliance could be placed upon that statement. A bed of coal, not exceeding? feel: In thickness, had been worked for some time on the brow of a mountain near Lough Allen, and the coal was found to be highly bituminous, wall adapted for domestic purposes; the only drawback being a thin layer of shale, which was very apt to stick to it, and prevent its sale in very large quantities. It is, however, worked cheaply, and in winter 162, per ton was obtained for it, and in summer 62, or 72, per ton. The other seams were very liable to be molested by faults. Who, the former Creevella Iron Company was in existence, they laid out a great deal of capital in Lettrim to produce a coke which may be successfully used for smelting purposes. A second (the, present) Creevella Iron Company was employed in working a very rare deposit of ironstone, about four miles north of Drumkeevin, with the view of discovering whether iron could be manufacture by the use of peat charcoal as fael. The ground being exceedingly soft, no blasting was required.

Mr. W. S. Clarks thought it would be advantageous to postpone this paper also until the next meeting, so that a little more light should be thrown upon it. It was evident, from the paper which had just been read, that some paris of reland were most neglected, and the people there were in a very dreadful state. He (Mr. Clark) would respectfully suggest to the writer of the paper, or his friends, that some plans and sections of those parts of the country alluded to should be produced at the next meeting, and that they should go more into statistics as to the mineral resources of the country. With this object he would move that the discussion of the peoper be pos

BY MR. C. II. WARING, OF NEATH.

THE APPLICATION OF MACHINERY TO CUTTING COAL.

The secretary next read this interesting and valuable paper, the various points of which were more fully explained during the reading by the model exhibited by the writer. Mr. Waring says:—"The application of scientific principles to practical purposes has not only increased the power of production, but has materially reduced the cost of our manufactures, and wonderful progress has been made during the present century in assisting and alleviating human labour by mechanical contrivances and the employment of natural agencies. To steampower we are mainly indebted for our commercial prominence; but it is remarkable that the prime agent of this great power—conl—is still execurated by tools of the most primitive description, and requiring the utmost amount of bodily exertion to render effective. The stooping or juig peature in which the coliter is usually obliged to work is most unfavourable for the proper application of his muscular force, and renders his about unasually severe, and this generally in a temperature which tends to diminish his physical energies. From this mechanical application of power results great ions in cutting coal—I. By appropriation of the coal seam hewed only, and the great difficulty of getting the remainder—2. By the quantity of the size of coal so produced, and which is worth—less, or nearly so.—3. By the quality of the size of coal so produced being poorer than if worked by a better method.—6. By the use of gunpowder, which shatters the coal, and renders it fraible in transportation.—6. By the irregular fracture of the lumps of coal, occasioning it to occupy more space in stowing than if worked in more cubical forms, consequent on the yield per acre of coal of marketable quality not being so large as it might be. It is evident that, if mechanical agency can be applied to he wing coal, the above series of losses would be avoided. From experiments made it has been shown that machines worked by manual power would not be practically economical, opening out a new sett, beadways may be driven to various districts without the expensive accompaniment of airway courses, for the machine, with its air-negine, would cut, and hew, and ventilate at the same time, besides doing the work much more rapidly than can be done by manual labour. The size of the machine will vary according to the sizes and quality of the seam to be worked, and according to the method of cutting." [Mr. Waring here explained, by diagrams and sections, the way in which his machine would be applicable to the various seams of coal, and, by arithmetical calculations, demonstrated the value and utility of such a machine in cutting coal.] The writer than continues:—"The difficulty of introducing such machines and the modes of working will be fully understood by all engaged in mining. To merely try experiments is very expensive, and to lay down air pipes, and erect the necessary machinery for trying than completely, would in old and open collieries require so large an outiny as to deter most proprietors from the speculation. There was also to be overcome the prejudices of some who consider that the introduction of machinery will take the bread out of their mouths, although experience has proved that, when the production of any commodity is facilitated by machinery, the increased consumption consequent on the reduction of price is such as to increase the demand for labour to obtain it. There is altitude doubt but that eventually some means will be found to practically bring machinery in the working of minerals; meanwhile, the record of all done in the direction will be useful to those who follow in the same endeavour. It is hoped that this paper on the subject may elicit from chiers the results of their trials and experience, not only in the outing of coal by machinery, but in the use of compressed air generally, as proving the practicality of this will go very far in assisting the introduction of machines in the headings and working faces of our coal drive any machinery.

faces of our coal mines.

Mr. Meneralus said there was no doubt that they could drive any machine through a mine by means of compressed air, but there was a great loss of power—in fact, it was immense. He had paid a great deal of attention to this subject, and he firmly believed that they would some day or other have a coal-cutting machine. For his own part, he had no doubt at all upon the matter. Mr. Waring had paid more attention to this than he (Mr. Menelaus), and therefore, he felt somewhat modest in offering an opinion; but he did not think that

EATKIN

Waring had got hold of exactly the right plan. He believed that Mr. W. Pearco advocated the right principle. (Mr. Waring—That has been abandoned). He

Mr. Waring had got hold of exactly the right plan. He believed that Mr. W. Pearch had advocated the right principle. (Mr. Waring—That has been abandoned). He (Mr. Menelaus) was not aware of that, and he was very sorry to hear so, because the plan appeared to him to be a very simple one. He had been very much pleased with a description which had been given him of that machine, and Mr. Truran had also written very favourably about it. Working underground was every day getting more and more objected to. The going into the coal mine, perhaps, at seven o'clock in the morning, and not leaving until, perhaps, five o'clock in the evening was being more and more complained of every day, and he believed unless they did something in the matter that coal would get very dear. The aubject upon which Mr. Waring had treated was a most important one, and, therefore, should be kept open as long as they could. Working coal by means of machinery was, undoubtedly, a difficult matter, but ploughing by machinery was far more difficult. Engineers and practical farmers, however, had got over that, and it would be a stigma upon them as engineers and miners if they, too, did not eventually overcome their present difficulties, and introduce a practical coal-cutting machine.

Mr. W. S. CLARK said he perfectly agreed with Mr. Menelaus when he ebserved that this subject was a most important one. The work of the collier was a most disagreeable one, and the most laborious part of the work was the "kerling" and "antiting"—that was a description of work which, in his opinion, was worse than negro work; and he should curtainly hall with great pleasure and satisfaction the introduction of any means which would do away with auch work. The filling was not so bad, but the kerling was certainly most disagreeable. This object, however, was not a new one. He remembered some 40 years ago a most ingenious machine was introduced, which was called the "wood-man." A great deal of prejudice then existed against its introduction, but it appeared well adapted t

ighten years.

Mr. Menelaus thought it would be only due to Mr. Waring that they hould segrave as many of the diagrams and sections as they could possibly afford.

Mr. Waring said he had written the paper for the purpose of eliciting the model, which perhan, was as yet a failure.

Mr. WARING said he had written the paper for the purpose of eliciting discussion, and he had brought forward this model, which, perhaps, was as yet a failure, in the hope that those gentlemen who turned their attention to the subject might take a lesson, and not go over the same ground again. (Hear, hear.)

Mr. BAGOT said that a very large sum of money could be easily collected amongst the members of the Institute and their friends for the purpose of offering a premium for the practical development of a coal-cutting machine. He had no besitation in saying that the sum of 5001, could be readily procured from the various firms in South Wales for the purpose of offering a tangible gift, or reward, for such a machine; but, of course, he would not give the money unless the machine was in every respect applicable to the work.

The PRESIDENT said that at the council meeting, held the previous evening, a question was asked as to what should be done with the money they had in hand.

ing, a question was asked as to what should be done with the money they had in hand. Perhaps some portion of it could be given towards a premium for the production of a practical coal-cutting machine.

Mr. Brough said they must erect a suitable building for themselves first with any surplus sum in hand.—A cordial vote of thanks was then accorded to Mr. Waring, and the paper was ordered to be printed in the Society's Transactions, with the view of further discussion.

### THE VENTILATION OF MINES.

BY MR. HALE.

The writer of this paper was formerly a working miner in the Risca Colliery, and was there at work when the disastrous and fatal explosion occurred. He is now a pupil in the Mining School of Bristol, and as an algebraiat is exceedingly clever, having, perhaps, but few superiors. The paper in question was only valuable for its algebraic calculations. It is ordered to be printed, and will be discussed next meeting.

The PRESIDENT said that the thanks of the Institute were specially due those gentlemen who had favoured them with such valuable papers that day, and he could, therefore, move a cordial vote of thanks to them. Carried nem. con. Mr. Brough moved a vote of thanks to the Council of the Royal In-

stitution for the use of the room upon that occasion.

Mr. Thomas Evans seconded it, remarking that the Council of the Insti-

were always ready and pleased to give the institute of Engineers every assistance power.—The resolution was carried with acclamation.

MENELAUS observed that this was the last time they would have the

Mr. MENELAUS observed that this was the mat time they would have the opportunity of seeing their friend, Mr. Adams, in the presidential chair, the new President (Mr. Thomas Evans) entering upon his duties at their next meeting—viz., the dinner. They all knew that Mr. Adams had discharged his duties mot efficiently and zealously, and the Institute had thereby derived great advantage. Without further observations, he would propose that the best thanks of the Institute be given to Mr. Adams, for the efficient and able manner in which ha had discharged the duties of President during the past year. (Cheers.)
Mr. W. S. Clarukte cordially seconded it, and the resolution was passed roots unanimously, and, having been briefly acknowledged by Mr. Adams, the proceedings terminated.

The DINNER took place at the Mackworth Arms Hotel, at four o'clock

Mr. W. S. C.ARIKE cordially seconded it, and the resolution was passed most manimously, and, having been briefly acknowledged by Mr. Adams, the proceedings terminated.

The DINNER took place at the Mackworth Arms Hotel, at four o'clock There was a very large company. The chair was taken by the President elect, Mr. Thomas Evans, F.G.S., who was supported on the right by his worship the Mayor (Mr. J. Trev. Jenkin), Mr. Starling Benson, the Chairman of the Harbour Trust, &c.; on the left by Mr. Lionel Brough, of Clifton, the Government Inspector of Mines for the West of England district. The vice-chair was occupied by Mr. Williams, and the Harbour Trust, &c.; on the left by Mr. Lionel Brough, of the company of the compa

the district. Mr. Evans, by the manner in which he had discharged his duties, both towards the collier on the one hand and the employer on the other, had gained the confidence and esteem of all. He would, therefore, give them the health of Mr. Evans, their President, feeling assared that they could not possibly have a better man to preside over their councils. The tosats was drunk most enthusiastically.

Mr. Evans, in responding, said he feit very much obliged to Mr. Benson for the very kind way in which he had expressed himself in introducing his name. He felt that he scarcely deserved the many kind remarks which had been made about him: but if in this district he had won the good feeling of the workmen and the masters, he had only one his duty. As regarded his present p sition, as President of their institution, he naturally felt some diffidence, being placed in considerable disadvantage by having to follow immediately after so able a President as Mr. Adams. However, his humble services were entirely at their disposal, and he would do everything in his power to forward the interests of the Institution.

The PRESIDENT said the next tosat to be proposed was "The Iron and Coal Trades of the District." They were all dependent upon one or other of these trades. They in South Wales had acquired as good a position as any other in Great Britain. They had as large works, as well conducted, and could make as good iron sany part of the country. With regard to the coal trade it was as yet only in its infancy, but they were progressing, and one thing was quite certain, that they would be ready and able to send as much coal down to the various ports as any merchants or shipowners were willing to pay for. The names of Messrs, Menelaus and Rhys were coupled with the tosat.

Mr. Ruyrs, of Aberdare, responded to the tosat on behalf of the coal trade, and reterated to remark at the proposer of the tosat, when he said that the colliery proprietors of the Aberdare district were quite prepared to send down any quantity of coal to

gauge trucks when they liked. He was glad to see there was now every prospect of thap port having such communication very soon, and when obtained he did not see why Swansea should not rival the port of Cardiff. He would now give them as a toast "Success to the Port of Swansea."

The MAYOR responded. Whilst he acknowledged that there was room for improvement in Swansea he could unhesitatingly state that every element of success existed in this town, quite as much as in any other town with which he was acquainted. With respect to the graving dock, in which large vessels could be repaired, he was happy to be able to say that was a desideratum which would not be allowed to remain wanting much longer. Two or three sites had already been thought of, and the formation of a graving dock was a subject which he felt confident the public spirit of Swansea would not allow to remain open much longer. He quite agreed with Mr. Menciaus when he said that in order to have any great degree of prosperity they must have narrow guage communication, and he was glad to be able to say that very shortly they would have this communication not merely to Swansea, but down to the very side of the docks, and that the communication of the country. With regard to what had been said as to Swansea rivalling Cardiff, he felt sure the inhabitants of Swansea had no such desire. All they wanted was that fair amount of trade which they had a right to expect consequent upon the great facilities which the port offered to shippers.

Mr. W. S. Clarke next called upon the company to fill their glasses, as he had a toast to propose which he felt sure would be most cordinity and unanimously received. He gave them the "Government Inspection producing ill-feeling and inconvenience, which more hardward to the surface of the

actuded the proceedings, a most agreeable evening having been spent.

#### AUSTRALIAN MINES.

By the present mail from South Australia we have accounts from the various mines, which, on the whole, are satisfactory, although, taken generally, they are in their infancy of development. We more particularly nerally, they are in their infancy of development. We more particularly allude to those in the northern districts of the colony, which, in several cases, present most remarkable features, and must, ere long, be productive of great results. The last which has been established by British capital is the Yudanamutana; and this seems likely to take the lead of all, if the official reports and the private mercantile letters can be relied on, for all represent it as a property embracing several mines of the greatest apparent wealth. The local press likewise makes special allusion to the Yudanamutana, and we heavylith transcribe two or these of their paragraphs. namutana, and we herewith transcribe two or three of their paragraphs

in reference to the same:—

"The mines which show more prominently during the month are the properties of the Yudanamutana Copper Company, on which large quantities of very rich ore have been raised, and forwarded towards Port Augusta. Fresh lodes have deen discovered, and from what has been aiready seen of these properties, they promise to rank amongst the best in the colony."—South Australian Chronicle, July 23.

"YUDANAMUTANA COPPER MINES.—The reports of this month advise large quantities of rich ore having been raised both at the Yudanamutana and Blinman Mines, and a great number of drays have been loaded and sent on to Port Augusta; but the dedicincy of feed, owing to the lateness of the rainy season, having kept back some of the drays, there still remain large quantities of ore at grass at both the mines ready to be sent off. It is, however, expected that the copious rains which have lately fallen will facilitate cartage operations. There have been several fresh discoveries made on these properties.—South Australians Register, July 23.

"The YUDANAMUTANA MINES are turning out first-rate. We are informed by parties who have visited the mines that they are sending away blocks of cop-

formed by parties who have visited the mines that they are sending away blocks of copper from 4 to 6 cwis., over 50 per cent. Several drays have already left. About 70 tons of equal value is now at grass. There has been plenty of rain lately, which will greatly facilitate cartage. The captain says he can load away any quantity of drays as fast as they arrive. At the Illinman Mine, belonging to the same company, they are raising large quantities of rich ore. Several more lodes have been cut, bearing ore of high percentage. In one of the shafts, 16 feet deep, a fine lode has been cut 4 feet wide, worth about 400; per fm. A large quantity has already been dispatched to Port Augusta."—South Australian Advertiser, July 23.

YUDANAMUTANA COPPER.—The superintendent (July 23) reports—"I am pleased to say that everything is in a very satisfactory state. Large quantities of mining tools, &c., have been dispatched to and are arriving at the mines. Several drays have loaded, and are returning to Fort Angusta with ore. The reports, both official and from private sources, speak in the highest terms of the prospects of the mines, and from conversation I have had with Mr. Bonney (the superintendent of the Great Northern Mines) and other gentlemen, who had just returned from a tour of inspection, I believe they are perfectly true. I am making arrangements with two parties here for the putting on immediately of from 200 to 400 teams of either horses or bullocks, as we have any quantity of ore. I start for the mines on Friday next." Capt. Terrell's report, dated July 5, is as follows—"Section 135 A: The men are sinking a shaft through the large deposit; they have raised since my last report from 30 to 35 tons of copper, yielding upward of 30 per cent.—Section 125 B: I have traced the lode still further up the hill. It is 2 to 3 ft. wide, of very rich copper, making bigger as it goes down. Several other lodes are making together in the flat, and it is my opinion that this will make one of the best mines in South Australia.—Section 141: We have raised from this mine since my last report 30 tons of copper or, worth, I believe, 40 per cent. The shaft is no more

lodes are making together in the flat, and it is my opinion that this will make one of the beat mines in South Australia.—Section 141: We have raised from this mine since my last report 30 tons of copper ore, worth, I believe, 40 per cent. The shaft is no more than 18 ft. deep; the lode is still good in the bottom and ends. In the shaft, 10 fms. south of the above, we are sinking through a lode of rich ore, 4 ft. wide; no wall as yet, shaft 16 ft. deep, lode worth 4001. per fm.; richer ore I never saw; 17 fms. further south we are also getting good ore, and from the above workings we have raised 35 tons, very rich. The men are well conducted, without complaints, and are very industrious."

KAPUNDA.—The manager at the mines (July 22) reports that the continuance of heavy rains has considerably retarded his operations. The ground in the 60, driving north-west of Buhi shaft, is daily improving in its character; the branches that the men are driving on are-small and broken; but in the winze under the 50 they had a very good branch of ore, with 12 fms. still to drive northward, which it was expected would not be accomplished under six weeks. The May ores were 263 tons, of 17 per cent. average produce, equal to 44% tons of pure copper; and the sampling for June was estimated at 200 tons of ore. There are 100 tons of copper at the port waiting freight, which for the past month had been difficult to obtain.

GREAT NORTHERN COPPER.—The local committee (July 23) state—
"We are in treaty with the agents of the Grand Trident, just arrived from Sydney, and

GREAT NORTHERN COPPER.—The local committee (July 23) state—
"We are in treaty with the agents of the Grand Tr ident, just arrived from Sydney, and laid on for England. This vessel is expected to get away next month, so that by next mail you will receive bills of lading; the delay in this shipment will enable the committee to make an addition of about 20 tons now coming down from Port Augusta, which will make the total quantity for the Grand Trident about 70 tons of high percentage; the assays of the different parcels giving 30 and 31 per cent. produce; the insurance for which you will cover in your open policy." Capt. Morrison reports under date July 11—"I have now the pleasure to inform you that the engineat the Nuccaleens Mine has at last gone permanently to work. Respecting the operations here there is nothing particular to communicate; the additievel from shaft is in 7 fms., and the one from the creek to meet it 9 fms. On Monday the miners will commence to sink. Mon are engaged securing the back of the 10, which has partly gene through since the water was let into the mine. At the Aratunga Mine the men are still working the same stope, which has improved very much this last few days."

WORTHING.—Bremer Mine, July 22: Lean's shaft is down to the

WORTHING.—Bremer Mine, July 22: Lean's shaft is down to the 32 There are some good stones of ore in the bottom of the shaft. The stopes in the 23 43 have yielded \$4\$ tons of ore. Owing to Midsummer day, &c., the men have a working the whole time. The old workings south are being cleared as with a view extended workings in that direction. Wood coming in abundantly. Smelling going attisactority. Twenty tons of rough copper had been made, and the regulus firmseake steadily going. A shipment of regulus had been made, but owing to its being sent steadily going. A shipment of regulus had been made, but owing to its being sent at present; there is a branch about 6 fin. wide in the theorem the particulars had not come to hand.

NORTH RHINE.—Capt. Barkla (July 18) states—I have to informy the lode in the 60, driving south of Cope's engine-shaft, is about 2 ft. 6 in. wide, but put at present; there is a branch about 6 in. wide in the end running parallel with the lode if it should strike in with the lode there is not a doubt that the lode will make large quantity of copper or make the cope's engine-shaft, on the main lost the lode is about 3 ft. wide, with good spots of black ore in ft; this lode is likely to make a large quantity of copper ore when the end is driven morth under the fat:

BON ACCORD.—July 19: The workings in progress, according to he report, have been continued—1. Driving east and west at shallow depth, as recommend by Elijah Whitford, near the boundary line on the west side of the property, and os alderably to the weatward of all workings that had been executed prior the comment of Whitford's workings.—2. Driving east and west from the most eastern shauk on the east side of the property near the boundary line, before Capt. Dalley recommended by Capt. Dalley, and drivings east and west from the most eastern shauk on the east side of the property gent has been made at the Capt. Dalley recommended by Capt. Dalley, and driving east, west, and north therefrom. This shaft been carried down 24 fms., and drivin

d in prognostications."
ENGLISH AND AUSTRALIAN.—July 22: The stock of coal at Kooring and Park Adapted 1704

ENGLISH AND AUSTRALIAN.—July 22: The stock of coal at Kooring was 105 tons; at Kapunda, 1120 tons; and discharging at Port Adeialde 1170 tons besides 1660 tons of wood at Kooringa. The furnaces, both at Koorings and at the 70 works, had been let out, but the manager expected to have them re-lighted in size day WHEAL ELEN.—Capt. Prisk, July 22: In handing you my report is the past month, I have to inform you that we have been busling engaged in enlarging at imbering Spencer's shaft, for the purpose of drawing with two kibbles; it now beit completed, we shall recommence to sink the shaft under the 30. The lode in the bettom of the shaft is about 3½ ft. wide, composed of rich black and yellow copper or galena, jack, quartz, prian, and mundle. In the last 3 ft. sinking the lode has very ma improved. I should advise that the shafts be pushed on as fast as possible. We have albeen sinking in the bottom of the 30, at Spence's shaft, and stoging in back and bottom the level, where we have broke some good ore, and also in the intermediate level; but present both places are poor, and I have set it on tribute to two men. Our surfawork has been confined to dressing copper ore and amelting with the blast, making regulus: 15 tons regulus and 8 tons silver-lead would be shipped by the first opportunit Fortune.—Lionel Samson, Fremantle July 22: In consequence of the musually stormy weather, I have not received any report from the mine, and am, ther fore, unable to give you any account of the progress of operations during the past most long to enclose bill of lading of 2014 bags copper ore, weighing 136 tons, hipped p Kestrel, and should have sent about 9 tons more, but the vessel could not take it.

DUM MOUNTAIN.—July 12: The 422 tons of chrome ore excavated dring the past month has been taken from the new reef, which we shall call No. 2 we great the stone of the past month has been taken from the new reef, which we shall call No. 2 we greate the past month has been taken from the new reef, which we shall call No. 2 we greated

LUN MOUNTAIN.—July 12: The 422 tons of chrome ore excavated diving the past month has been taken from the new reef, which we shall call No. 2 m Mr. Hacket's old reef being called No. 1. No. 2 reef continues to look uncommonly we and continues to extend right into the mountain side, in width some 15 ft.; its depth yet unknown; it produces solid massive blocks of very rich chrome ore, with little no waste or small chrome. The total amount of chrome shipped from hence direct London, and wa other ports, to this date amounts to about 1620 tons, and the to amount brought down from the mines to date is 2018 tons, so that the quantity phoped would be brought down within the present year has been exceeded in but lit over five months.

PORT PHILLIP AND COLONIAL GOLD.—Mr. Bland, un ier date, Melbou PORT PHILLIP AND COLONIAL GOLD.—Mr. Bland, un ler date, Melbourn July 25, reports:—Quartz Crushing: I have again a satisfactory report to forward. Trushing: I have again a satisfactory report to forward. To quantity of quartz crushed during the past month was 264 tons, yielding 2489 at 18 dwts of gold, or an average of 17 dwts. 6 grs. per ton. The receipts on Clauses count were 42801 12s. 2d.; expenditure, including Melbourne management, 1922, 6s. 2—proftl, 27881. 6s. The receipts amount to 11. 9s. 3d. per ton, and the total payments 10s. 4d. ditto, deducting calcining and delivering, and Melbourne management, 1922, 6s. 2. The return for the quarter ending June is a very favourable one; the quantity of mater crushed during that period was 9988 tons, or an average of 713 tons per week. Tyleid of gold was 7645 cas. 6 dwts. 12 grs., or 15 dwts. 7 grs. per ton. The recip amounted to 13,1661. 11s. 3d.; total payments in the colony, 55231. 17s. 10d.—prof 1621. 13s. 3d.; and it am glad to say that the yield for the present month is still ted ing up.—Machinery: This continues to work well. Since the date of my last that starts fittings have been completed, as well as the gas furnace, and both these are now work. The large pumps are being placed, and Mr. Davies will keep his diters at we on them when not engaged in ordinary repairs to the machinery. These pumps are being placed, and Mr. Davies will keep his diters at we on them when not engaged in ordinary repairs to the machinery. These pumps are being placed, and Mr. Davies will keep his diters at we on them when not engaged in ordinary repairs to the machinery. These pumps are being placed, and Mr. Davies will keep his diters at we on them when not engaged in ordinary repairs to the machinery. These pumps are being placed, and Mr. Davies will keep his diters at we on them when not engaged in ordinary repairs to the machinery. These pumps are being placed, and Mr. Davies will keep his diters at we on them when not engaged in ordinary repairs to the machinery. These pu

breaker continues to work very well.—Cluues Mine: The work at the north augoing on slowly, owing to the hardness of the ground, and the number of quartz veitraversing it; the shaft is now down 1110 feet in all. A remittance of 3000f, has been carried to the theorem of the control of the con

considerable."

GREAT BARRIER.—With the operations of the Great Barrier Compan advancing, the land about Tryphena Harbour and Ookip will ere long be required in settlements, and I have prepared the report and map with a view to having data ready settlements, and I have prepared the report and map with a view to having data ready according to the company of the settlements. Barrier Island lies around Port Ale and Island of Port Fitzroy are located settlers, who hold their farms on lease from the company, as keep stock on shares of the increase and produce. The grass cultivations of some of the farms are very luxuriant, and the enterprise appears a successful one.

SALE OF THE MANOR OF TRELEIGH.—From an advertisement in an other column, it will be seen that by a decree of the High Court of Chan cery an undivided third part of the manor of Treleigh, and lands of Treng with, and Nances land at Redruth, and an undivided third part of the Bolina estate at Camborne, will be sold by auction, by Mr. Tippet, of Bolina estate at Camborne, will be sold by auction, by Mr. Tippet, of capitalists desirous of investing in a mineral district. The great run of lodes frails of capitalists desirous of investing in a mineral district. The great run of lodes frails of capitalists desirous of investing in a mineral district. The great run of lodes frails of capitalists desirous of Treleigh, and very large returns were made from the entire length of the manor of Treleigh, and very large returns were made from the lodes in the Wheal Harmony and Montague Mines, which may now be opened with a lodes in the Wheal Harmony and Montague Mines, which may now be opened with a the property, which is now ended by the decree referred to. The Treleigh Consols, fact the property, which is now ended by the decree referred to. The Treleigh Consols, fact the mines, are working in the parish of Redruth, and the Bolin ruth Consols, and other mines, are working in the parish of Redruth, and the Bolin lodes of which run through the property.

THAMES TUNNEL COMPANY.—Receipts for the week ending Sept. 13
1131. 193. 6d.; number of passengers, 27,354.

"A SAFE ON SAFE TERMS."—The attention of our readers is requested to an advertisement which appears in our Journal to-day, headed "Extraordinary Barton and Company having lately agains," from which it will be seen that a Provincial Insurance Company having lately agains, "from which it will be seen that a Provincial Insurance Company having lately laying at the various branch offices, they have been returned to the manufacturers, to be lying at the various branch offices, they have been returned to the manufacturers, to be sold for half their cost; but the most important feature is, that parties at a distance as expects and the company of the safe and the spects satisfactory, it may be returned without any cost whatever to the person ordinate, and as they are sent carriage free to any station it may prove worth the attention of these useful articles.

GOVERNMENT INSPECTION OF MINES. THE INSPECTORS' REPORTS.

his week gave our usual tabulated summary of the accidents in is turning the year 1861, together with the corresponding figures eding year, in order to facilitate a comparison of the mortality; agh, from the length of time which has elapsed since the calasported upon occurred, the interest in the particular accidents has a subsided, the observations and suggestions which they led the impectors to make are still worthy of every attention. We have stated that the return, upon the whole, is satisfactory, inasmuch there were more separate accidents, the deaths resulting were less numerous. In 1860 the total number of accidents at mass was 769, causing 1109 deaths; whilst during last year states was 769, causing 1109 deaths; whilst during last year sensell separate accidents, causing 943 deaths. Consequently, which have decreased to the extent of 15 per cent.; and if we compared to the extent gorted upon occurred, the interest in the particular accidents has

North Durham, Northumberland, and Cumberland district) EDEX (North Durham, Northumberland, and Cumberland district)
so that it is a matter of great congratulation that, so far as his dissistement, the annals for the period are remarkably free from any
statistic from explosion or otherwise, and that in only four insal dittere been more than single deaths involved. As for explocit continues, there have only been seven cases, comprising the
salf individuals. Accidents in shafts, too, are of a very limited number, so that
salt in fatalities consists of falls of coal and stone and single canualties, which
successful under any general head, but may be termed miscellaneous.

Eximison's (Southern division of Durham district) report is gene-pare satisfactory than any which he has presented during the last satisfactory than any which he has presented during the last satisfactory than any which he has presented during the last sable increase. The miscellaneous and surface accidents seem to said Mr. Atkinson's total, the other classes of accidents remaining is although the number of separate accidents shows a somewhat sinkle increase. The miscellaneous and surface accidents seem to gind Mr. Atkinson's total, the other classes of accidents remaining inte same as usual. Referring to explosions of fire-damp, he restait the fact "that no more than one person should have died from the effects of single fact of the past year in so extensive a district, with so many sing of a copious discharge of fire-damp, cannot but be regarded as a highly discrevidence of the great provision made, and of the care and vigilance exercised amagers of the mines, as well as the high state of discipline prevailing amongst the mines of the same time, be considers that there is ample room for improvement sighter of these respects in several collieries in the district, as they compare maly with many others, where ventilation is carried out to the extent of leaving wide margin beyond the mere requirements of the first general rule of the state. A few, unfortunately, content themselves with a bare compliance distry limited requirements of that rule as to ventilation. To find a mine in median of the most unpleasant things that an Inspector meets with in the minimal of the many thousands of pounds), seeing that under ordinary circumstances may, from time to time, render them unit of median of many thousands of pounds), seeing that under ordinary circumstances may, from time to time, render them unit of the significant of the district of the class, in the continuity of the continuity of requirements, that a very slight departure from what may be into ordinary circumstances may, from time to time, render them unit of the continuity of requirements, that a very slight departure from what may be into ordinary circumstances may, from time to time, render them unit of the continuity of the c

must a such an accident as that at Hartley, but from the length of time that since the report was made they have lost all interest, the Act concerning shats having long been passed.

Pincipal facts connected with the working of the Act in Mr. most's (North and East Lancashire) district were published in the Journal at the beginning of the year, when it will be remembled that the beginning of the year, when it will be remembled that the beginning of the year, when it will be remembled that the beginning of the year, when it will be remembled that the beginning of the year, when it will be remembled that the beginning of the year, when it will be remembled that the beginning of the year, when it will be remembled that the subject of the year of y so meet their views on these. Perhaps the best testimony in favour of maged at the fact that in two arbitrations which have taken place in a neighbouring district, this code has sorved as a text for both in a neighbouring district, this code has sorved as a text for both circular, to which we have already referred, he says that in some interest of the satisfact that the circular has produced a beneficial effect. Extra applied for, for distribution amongst the assistant managers; and in death underlockers have been told that in future the number of accidents against the consideration in judging of their abstracts which they hold. The list of suggestions from various to accidents in collieries is so well worthy of consideration that we expeating Mr. Dickinson's opinion, that the suggestions are made with but in several instances without sufficient knowledge of the subject. Yo fitness proposals may serve to show philanthropic individuals what what has already nem proposed. Mr. Dickinson agys:—modical inspacers, submitted as seaf for securing safety-lamps. It consists with the ends so punched that they can be locked or increased as the same in principle as that to which one of my designs; and a similar tices has been brought forward by Mr. Parkinson, Romey jears such as men in principle as that to which one of my design of the proposal subject in the subject of the su

ment in an rt of Chan s of Treng part of the Tippet, of the attentic lodes formin through the form the ened with ad this share c Consols, Red not the Bolinat district, the

ng Sept. 13 is reques baving latel and deed chest acturers, to b

Mr. Richard Meson, of the Downs, Bowden, Cheshire, recommends exhausting the air by cylinders and pistons. These and many other mechanical appliances, as he has said, are old, but as yet in this country they are not so much used as the furnace, which has been considered bester. In France and Belgium mechanical means are found best, and he hopes that the experiments which Mr. Atkinson and himself are making, with the consent of the Secretary of State, will be of use in drawing more attention to the advantages of mechanical means of ventilation.

Mr. R. H. Hughes, of 96, Hatton-garden, London, proposes to ventilate by forcing fresh air into mines by pipes or channels. This is in reality nothing new.

Mr. F. Whitehead offers to prepare diagrams and explanations of a system of pucumatic sewerage, to remove the gases as they are generated, and prevent them from mixing with the general circulation. He need scarcely say that this is what is almed at in practice. It is seldom that sewers or drains under the roads are used for air, as a pair of full-sized levels, one for the intake and the other for the return air, as usually practised, are in many respects better, but in some instances sewers are used instead of airpipes or brattices, and in the Ubberly Colliery at the time of the serious explosion they they were the insufficient means employed.

Mr. Daniel Hamilton, of Dollar, near Stirling, proposes two force-pumps to introduce hot and coal air to where the colliers are at work, the heated air being to cause a draft in the ventilating shaft. Similar plans have been previously proposed, but the same object is got at in a cheaper and more efficacious way by the furnace.

Mr. G. L. W. Eyre, I, John-street, Bedford-row, London, draws attention to a case of want of proper attention on the part of the owners and managers not seeing that the coof of the mine was properly secured. He had brought the matter under the notice of the mannes yet, that the procautions are ser requently to keep impressing that the accident from fai

support of the means by which many of these accidents may be prevented.

Mr. Robert Thompson, iron moulder, 39, Robert-street, Millwall, Poplar, suggests the use of a fan and sir-pipes. He is evidently unaware that the method is commonly practised for obtaining smail quantities of air, and that pipes are only looked upon as a temporary means of ventilation.

Mr. George Walloct, I, Eaton-terrace, St. John's-wood, proposes making a haven of refuge in every seam of coal, to which men might escape and wait for relief; the ventilation of such piace to be distinct from, and independent of, the remainder of the workings. A proposal similar to this was submitted by Mr. Goldsworthy Gurney to the Committee of the House of Commons on Coal Mines in the year 1852. In a colliery, however, with (asy) from 20 to 50 miles of underground roads such havens would have to be very numerous and secure to be effective against the biast of a great explosion and the succeeding after-damp. Some parts of collieries do occasionally form such havens. In the explosion in the Linnyshaw Colliery, on Feb. 27, last year, when nine lives were lost, several colliers escaped by shutting themselves into a short tunnel which had a door to it, and was used as a workshop and cabin.

Mr. George Gray, 13, Merton-place, Blackheath-hill, Greenwich, Kent, proposes a fan with pipes and stop-cocks, and to apply a light at the top, or to judge by smell, whether the air was fit for the men to go down. This has long since been improved upon, and much more effective means and tests are in constant use by means of the safety-lamp. Mr. George L. Boddington, of Dudley, suggest shat a sufficient number of sub-inspectors should be appointed to assist the inspectors of mines, so that there should be a pointed to assist the inspectors of mines, so that there should be a price of sub-inspection of each mine. This would be taking the management of the colleries and mines; and, in case of an accident, some independent person, like the present Inspectors, would have to be c

attlets to a mine.

Mr. George Hil. Adams, 1, Victoria-terrace, Notting-hill-gate, suggests that a boreole should have been put down either through the debris of the collapsed sides of the
haft, or through that part from the first to the second seam, to supply air and food to the

Mr. George Hill Adams, I, Victoria-terrace, Notting-hill-gate, suggests that a borehole should have been put down either through the debris of the collapsed sides of the shaft, or through that part from the first to the second seam, to supply air and food to the work persons.

As to the fatigue of metals, he believes it is now generally admitted that vibration, or a succession of blows or jerks, produces an alteration of the structure, and consequent weakening of fron; it can scarcely, however, be said to be at all common for materials, such as the beams of pumping-engines, which are made far beyond the strength requisite for the work, to be strengthened or changed on second of age, so long as they appear all right, and work satisfactorily. He has now, as inspector of Mines, had seeddents in these, by which upwards of 2000 lives, have been lost, referred to me, and amongst all he does not remember one that has occurred from the breakage of such a beam. Most of the dy-wheel, and such like shafting, is now in his district usually made of wrought-iron, which is found preferable to cast-iron for this purpose. For several other applications also cast-iron has been of late years superseded by wrought-iron. Still there are purposes for which cast-iron is preferred, and, as yet, experience has to be obtained as to whether all the advantages now anticipated from the substitution of wrought-iron state of the substitution of wrought-iron and the substitution of wrought-iron as almost articles and the substitution of wrought-iron is almost new.

Colonel Lioyd's suggestion seems quite sound, although in point of fact it does not apply to the Hartiey beam, in which the openings in each part were hexagonal, with a fat side both at top and bottom. It is well to avoid right angles altogether, and to have at least eight sides, or a slot with a key. Possibly wood wedges may absorb moisture, by which an almost trressible force might be produced; at the same time, a slight spring is obtained from wood, which, together with other el

That they did not succeed in removing the obstruction is most grievous; out it should be bowed to as unavoidable.

We quite agree with Mr. Dickinson that with another means of egress nearly all the loss of life would have been avoided.

Mr. Higson's (West Lancashire and North Wales district) report contains much matter that was valuable when the report was made, relating to the use of bratticed shafes, but now comparatively uninteresting. After detailing the principal accidents which occurred in his district during the year, Mr. Higson considers them according to the classes to which they belong. Speaking of accidents from explosions, he says that some of the secidents were brought about by the incantion of the deceased, whilst others occurred through the non-observance of some ordinary regulation, or the inadequate performance in the solid produced by falls from the roof and sides are again far too numerous, and the very striking fact that each accident has caused only one death tells a silent but terrible tale, inamen as siron the nature of the employment, and the system upon which underground labourers co-operate, it is evident that one accident might, in many cases, have caused the death of many persons. It may appear from these accidents that adequate supervision has either been ignored or it has completely failed, but upon a careful analysis of each and every accident as it occurred, he finds that it is not exactly so; neither can it be said that while workpersons have too often to be actually compelled to secure their own places of work, and as frequently neglect doing that when they are not observed, any system of management underlooker will be able to pre

vapour produced by an explosion of gunpowder from two shots, one of which burnt out. The deceased, who were standing in a mouthing only a few yards above the bottom of the pit, desended too soon after the shots had been fired, and as they were attempting to return they were overpowed and fell, and aithough several persons descended immediately to their relief, life was found to be extinct. In a few minutes the gases and vapour had become dissipated, and the scene of death perfectly safe. Upon reviewing, continues Mr. Higsen, the dark and fatal lists of accidents which have occurred in his district, one cannot but feel astounded at the number, and amazed at the peculiar character of many, and the mode in which they have occurred. It would be well, therefore, for those immediately concerned in the management of collieries to reflect most seriously on the fatality which annually takes place, and to endeavour with their utmost determination to improve this state of things, but that can only be effectually accomplished by a skilful and proper arrangement in laying out the works in the first instance; by establishing and enforcing discipline throughout each and overy department; by producing constantly adequate ventilation; by the more general use of safety-lamps, even where adequate ventilation exists; by the strictest attention to putting up proper supports for the roof and sides of working places; and by that orderly, regular, and efficient supervision of labour which has been found so successful wherever it has been exercised. These and other regulations now in force, together with such further provisions as the Legislature can consistently make, may ultimately prevail.

[ To be concluded in next week's Journal.]

#### MINING IN THE ISLAND OF ISLAY, ARGYLLSHIRE.

In October of last year a lease of the mines and mineral property in Islay

MINING IN THE ISLAND OF ISLAY, ARGYLLSHIRE.

In October of last year a lease of the mines and mineral property in Islay was granted to what is now called the Islay Mining Company. Operations were commenced forthwith, and several of the mines opened out, which now give good prospects, and lead the company to suppose that mining ere long will be profitable in that island. A stamps and crushing-mill have been erected, and have been working a short time. A parcel of ore is about to be sent to market, which is expected to realise a considerable sum, as the lead ore is of superior quality, yielding 80 per cent. of lead, and from 16 to 18 cs. of silver per ton, whilst the copper ore gives no less than 28 per cent. of copper and 36 oss. of silver per ton, whilst the copper ore gives no less than 28 per cent. of copper and 36 oss. of silver per ton, whilst the copper ore gives no less than 28 per cent. of copper and 36 oss. of silver per ton, whilst the copper ore gives no less than 28 per cent. of copper and 36 oss. of silver per ton, whilst the copper ore gives no less than 28 per cent. of copper and 36 oss. of silver in the copper of silver per copper and super, with which they were greatly pleased, as the cake (baked by a Cornish lady) brought back to the Cornishmen at least reminiscences of their far-off homes. After the supper, Mr. Campbell (a holder of half the mines) gave a short address, and 51. to distribute amongst the men's wives, to purchase, as he observed, warm dresses for the winter.

A few words about the mines, their progress and origin, may, perhaps, be interesting to some of your readers. From accounts and traditions it appears that the mines were first opened by the Danes (some say Norwegians) in the 13th century. Little was done by them, with the exception of trenching on the course of the veins. These, however, are of considerable magnitude, some having been sunk as deep as 5 fathoms, and opened in length several hundred, showing, evidently, that the veins have been productive for their entire len

#### THE LEAD MINES OF SOUTH WALES-No. II.

THE VALE OF TOWY.

THE VALE OF TOWY.

Several weeks having elapsed since the first article of this series appeared, owing to a pressure of business, which delayed the preparation of them, it is important that we should repeat some of the principal facts respecting the lode in the Vale of Towy Mine, especially as there was some confusion in our description of it. In more than one instance lode was carelessly used as synonymous with the ordinary rocks of the country which are traversed by it. It will be remembered that the Vale of Towy Mine is in the Lower Llandilo rocks, probably below the argillaceous shales, marked No. 12 in the section of the Geological Survey. The strike of them is S.W. and N.E., and the lode runs through them direct N. and S., with some slight variations, traversing—I. Shale, 80 fms.—2. Silurian quartzitic rock, 150 fms.—3. Porphyritic rock, 150 fms.—4. Grauwacke, 19 fms.—5. Clay-slate, probably felspathic, 50 fms.—6. Porphyritic rock, 219 fms. The shale, which extends 80 fms. from the mouth of the deep adit, tips south about 3 ft. in a fathom; the Silurian quartzitic rock, which extends 150 fms., and inclines north 2 ft. in a fathom; the porphyritic rock extends 150 fms., and is conformable to the dip of the shale; the porphyritic rock extends 18 fms., and is conformable to the dip of the porphyry; the clay-slate extends 219 fms., and dips about 3 ft. in a fathom; the porphyritic rock extends 219 fms., and dips about 3 ft. in a fathom; the porphyritic rock extends 219 fms., and dips about 3 ft. in a fathom; the shale the mean direction of the lode is 15° east of south; in the grauwacke, it is split into branches; in the clay-slate, it is 15° west of south; and in the rock of the substantiant in the south, and in the rock of the substantiant in the south, and in the rock of the substantiant in the south, and in the rock of the substantiant in the south, and in the rock of the substantiant in the south, and in the rock of the substantiant in the south, and in the rock.

direction of the lode is 15° east of north; in the Silurian, from 15° to 20° east of south; in the porphyry, 15° east of south; in the grauwacke, it is split into branches; in the clay-slate, it is 15° west of south; and in the porphyry, 15° east of south. The lode has been productive only in the Silurian quartzitic rock, and in the porphyry (No. 3), which on the surface extends about 300 fms., but, owing to the peculiar (synclinal) dip of the rocks, is reduced in the 80 fms. to 220 fms., being an average shortening of the ore-bearing measures at the rate of 6 ft. per fathom in depth.

The lode underlies east from 2 to 3 ft. in a fathom. It varies in width from 2 to 12 feet, and its walls are generally well defined. The filling matter is, for the most part, barytes, which is of an opaque white colour; some portions of it, however, are highly crystallised and translucent. The barytes runs through the centre of the lode, and is in many places shut in by layers of carbonate of lime, but more frequently in the north than in the south of the mine. Quartz, both massive and crystallised, is also present. The oxides of iron are associated in large quantities with these minerals to the depth of 80 fathoms, when it decreases very rapidly. The lead, a well-crystallised and compact sulphide, runs through the barytes, the lime, and the quartz, in irregular strings, with frequent bunches of great value. well-crystalised and compact surpline, rans through the baryces, the lime, and the quarts, in irregular strings, with frequent bunches of great value. There are occasional lumps of phosphate, and some crystals of carbonate of lead, but in small quantities. The average yield of ore in the Silurian quartities rock has been 20 cwts, per fm., and in the porphyry from 8 to 12 cwts. per fathom. Almost from surface to the 80 the lode produced lead, and from the 80 to the 100 zinc blende. At the foot of the 110, and in the shaft sinking helow the 110 z new and promising course of lead are lead, and from the 80 to the 100 zinc blende. At the foot of the 110, and in the shalf sinking below the 110, a new and promising course of lead appears. The Silurian quartzitic rock is intersected by one cross-course and three slides. There is also a large cross-course, which has an important bearing upon the mine. This cross-course is intersected by a slide, which widens in depth at an angle of about 60° north to 80 fathoms, and it then inclines south at about the same angle, and reaches a point at 110 fathoms. The rocks are much disturbed by this slide.

We have now described the main features of the lode, and before any

We have now described the main features of the lode, and before enering upon other matters relating to it, we must remark that the mine has been very efficiently worked. We have never seen more substantial and tering upon other matters remains to it, we have seen more substantial and convenient operations carried out so economically, and with a view to the full development of the sett. There are four shafts. The engine-shaft is down 115 fms. About 75 fathoms north of the engine-shaft is Bonville's shaft, which is sunk to the 80; and 55 fms. south is Field's shaft, sunk to the 80; and 55 fms. south is Field's shaft, sunk to the 60. It the 90; and still further south 92 fms. is Nant shaft, sunk to the 60. is unnecessary for us to speak of the levels which have been driven, or the 90; and still further south 92 fms. is Nant shaft, sunk to the 60. It is unnecessary for us to speak of the levels which have been driven, or of the dressing-floor and buildings, which are in first-rate condition. Hitherto we have, so far as was convenient, followed the detailed and really excellent report of Messrs. Phillips and Darlington, which we have found, with one or two unimportant clerical or typographical errors, singularly correct; and it is but fair before we discuss the points which suggest themselves in the account we have given of this mine, that we should state the conclusion which Messrs. Phillips and Darlington came to when they visited the mine in October last. They approve of the manner in which the works have been carried out; and having recommended the introduction of tribute and the continuance of tutwork, they propose that the engine-shaft should be pushed to 120 fms., and galleries driven north and south; that the 100 should be driven at both ends to examine the ground up to the 80; that the 90 should be extended to the south; that the Nant adit should be continued, since a discovery at this point might alter the condition of the undertaking. They conclude in these words:—"The mine is worthy of further exploration in depth; and that, if necessary, the additional expense should be met by a call on the shareholders. Had the recent change in the lode afforded galens instead of blende ore, the mine at the present time would have been largely profitable; and we might add further, that in some would have been largely profitable; and we might add further, that in some of the most productive mines in the kingdom blende has been found at a considerable depth, and beneath it large and continuous deposits of lead ore have been met with; we would, therefore, recommend that the engine-shaft be sunk at least another 20 fms." With this conclusion we perfectly concur, and we will next week examine the grounds upon which our opinion rests.

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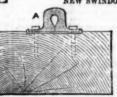
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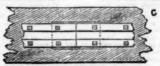
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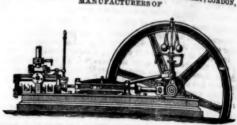
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